

## **AMENDMENTS TO THE SPECIFICATION:**

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 03/02100  
filed on June 24, 2003.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] Prior Art **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention is based on an **directed to an improved** exhaust treatment apparatus as  
generically defined by the preamble to the independent claim **for treating exhaust gases**  
**from an internal combustion engine.**

Please add the following new paragraph after paragraph [0002]:

[0002.5] Description of the Prior Art

Please replace paragraph [0003] with the following amended paragraph:

[0003] A filter for cleaning exhaust gases is **already** known from DE 3538107 A1, in which  
the **filter** material has different porosity along a flow line.

Page 2, please replace paragraph [0005] with the following amended paragraph:

[0005] **Advantages of the Invention**

## **SUMMARY AND ADVANTAGES OF THE INVENTION**

Please replace paragraph [0006] with the following amended paragraph:

[0006] The apparatus according to the present invention, ~~with the characterizing features of~~  
~~the independent claim,~~ has the advantage over the prior art of producing a filter or a catalytic

converter, which, during the regeneration, generates a flow guidance that reduces the danger of the development of a zone with a lower through flow and therefore an increased temperature buildup. If the apparatus is embodied in the form of a particle filter, then during the loading of the filter, an initial difference in the permeability is partially compensated for by the increase in the filter cake, which is more intense in regions of higher through flow. Furthermore, different objectives can be advantageously pursued by intentionally varying the permeability of the delimiting devices to produce different gradients in the flow resistance.

Please delete paragraph [0007].

Page 3, please delete paragraph [0010].

Please replace paragraph [0011] with the following amended paragraph:

[0011]        Drawings        **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0012] with the following amended paragraph:

[0012] Exemplary embodiments of the invention are ~~shown in the drawings and will be~~ explained in greater detail in the subsequent description, **taken in conjunction with the drawings, in which: [1.]**

Page 4, please replace paragraph [0013] with the following amended paragraph:

[0013] Fig. 1 **schematically** shows a filter with flow regions whose flow resistance decreases in the flow direction,

Please replace paragraph [0018] with the following amended paragraph:

[0018]        ~~Description of the Exemplary Embodiments~~

**DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Please replace paragraph [0019] with the following amended paragraph:

[0019] Fig. 1 shows a partial region 10 of a permeable body comprised of silicon carbide ceramic or cordierite. The [[part]] **arrow** labeled with the reference numeral 1 denotes the incoming exhaust flowing into a flow region 4 shown by way of example, which is embodied in the form of a filter chamber. At the end oriented away from the inflow opening 7, the filter chamber 4 is delimited by a closure 9 embodied in the form of a closing wall. The flow region, which is embodied as square in cross section, is laterally delimited on each of its 4 sides by a delimiting device embodied in the form of a filter wall 2. On the side oriented toward the filter chamber 4, the filter walls 2 are each covered with a ceramic coating 12 whose thickness decreases from the inflow opening 7 toward the closed region 9. The exhaust can pass through the filter walls 2 (i.e. the walls are permeable) so that on the other side of the filter walls 2, the exhaust can once again exit the filter body as depicted in the sectional view (see the arrows labeled with the reference numeral 5 that indicate the outgoing exhaust). The region of the filter chamber 4 oriented toward the inflow opening 7 here represents a first region with a first flow resistance to the passage of exhaust through the filter wall and the region of the filter chamber 4 oriented toward the closed region 9 represents a second region 13 with a flow resistance that is less than the flow resistance of the region 11. The exhaust-permeable filter body here is composed of a multitude of filter chambers 4 that extend parallel to the filter chamber shown in the drawing and adjoin directly above and below the region shown in Fig. 1.

Page 6, please replace paragraph [0021] with the following amended paragraph:

[0021] In an alternative embodiment form, the coating 12 can be a washcoat that also contains catalytically active components. This layer of washcoat with a suspension of

aluminum oxide particles on the carrier medium can increase the effective surface area significantly, for example by up to three orders of magnitude. This coating can contain noble metals, for example platinum and palladium or mixtures of these components. The coating can also contain cerioxide, which encourages oxygen storage. In a simplified embodiment form, the washcoat or the coating 12 is only applied in the region close to the inflow opening of the flow regions or filter chambers 4, while the last centimeter, for example, of the ceramic monolith remains uncoated. In addition to an immersion technique with a correspondingly reduced immersion depth for the washcoat layer, a preceding masking technique can also be used. In another alternative embodiment form, in lieu of applying the coating 12, the thickness of the wall material of the filter walls 2 close to the closed regions can be reduced. This likewise reduces the wall flow resistance in relation to the region close to the inflow opening, which produces the above-mentioned positive effect on the flow. In addition to being suitable for use with ceramic honeycomb filters, the apparatus according to the present invention and the method according to the present invention for applying coatings or removing wall material can also be used in sintered metal filters, oxidizing converters, or NO<sub>x</sub> reservoir catalytic converters. Another alternative embodiment form involves neither the application of a coating nor the removal of wall material. The filter walls contained pores whose areal density, volumetric density, or average size in the upstream filter regions can be reduced slightly in a controlled manner through the introduction of additional material. The material here must be able to withstand the operating conditions of the filter and should therefore be comprised of a suitable ceramic or precursor material that is then fixed by means of tempering or firing. Another possibility lies in precipitating particles comprised of ceramic or precursor material out of the gas phase onto the surface of the particle filter so that they are

deposited preferably preferentially in the upstream region of the filter. This coating is then affixed to the substrate by means of a corresponding tempering or firing process.

Page 11, please add the following new paragraph after paragraph [0031]:

[0032] The foregoing relates to a preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.